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HYDROCYANIC ACID IN PASTURE PLANTS

By

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In two recent articles Evans and Evans[1, 2] (1948 and 1949) draw attention to the similar effect on the isolated rabbit intestine of hydrocyanic acid and clover juice, and suggest that one form of bloat may be due directly to the high hydrocyanic acid content of legumes.

The subject of hydrocyanic acid poisoning interests us because one of the most important pasture grasses of East Africa—*Cynodon plectostachyum* Pilg.—is so rich in hydrogen cyanide at every stage of growth that its use would appear to be dangerous, and, in fact, it is known that the grass may cause death at certain times and under conditions that are not yet clearly defined. The articles in question suggest that the subject is one of general and urgent importance ; therefore we contribute the following notes as topical and interesting.

When *Cynodon plectostachyum* is submitted to the well-known " vest pocket test " with Guignard paper it gives a very strong reaction. The test is as follows:

Strips of filter-paper are dipped into a solution of 5 gm. of sodium carbonate and 0·5 gm. of picric acid in 100 c.c. of water, and used while slightly damp. A dry test-tube is one quarter filled with short lengths of the grass to be tested, after this has been ground with a little clean sand in a mortar. A few drops of chloroform are added ; then the strip of paper is introduced, with its upper end clamped in position by a tightly fitting cork. The tube is then put into a trouser or vest pocket for warmth, which hastens the reaction that turns the paper violet, when hydrogen cyanide is present in the grass.

We have made many tests of *Cynodon plectostachyum*, and only when the grass was old and dry did it fail to give a reaction that was usually strong, and under certain conditions very strong indeed. No other pasture plants in the neighbourhood gave such a strong reaction ; usually they gave no reaction at all.

Under natural conditions, stock rarely fill themselves with *Cynodon* alone, though as they relish the grass, and it is not only widespread but occurs frequently as almost pure stands, it must often be a major item of diet. We wanted to see what would happen if *Cynodon* alone was fed ; so for two months—from February 12th to April 13th—three native (haired) sheep were fed exclusively on freshly cut *Cynodon*, that never failed to give a strong reaction when tested with Guignard paper. The animals relished the diet and appeared to thrive on it.

TABLE

	Cynodon-fed sheep			Setaria fed sheep		
Weight on	1	2	3	4	5	6
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
13.4.49	70	60	42	80	70	50
25.6.49	66	59	44	81	68	63
Increase or decrease in lbs.	— 4	— 1	+ 2	+ 1	— 2	+ 13

It was an experiment of Evans and Evans that led us to make further observations. These authors fed cut clover to a hungry ox in a stall for fifteen minutes. Then the animal, that weighed 7 cwt., and appeared uneasy, was drenched with 0·5 gm. of sodium cyanide in a pint of water, and within a few minutes symptoms of cyanide poisoning were so marked that an injection of sodium nitrite was given intravenously to bring about recovery. It was suggested that this small dose of sodium cyanide estimated at half the Minimal Lethal Dose, was toxic because the animal was already half-poisoned by the hydrogen cyanide in the clover.

Our three *Cynodon*-fed sheep weighed 70, 60, and 42 lb. respectively on April 13th, when we picked out three more sheep from the laboratory flock, weighing 80, 70 and 50 lb. respectively, and put them in an adjoining stall. These new-comers were put on a hydrogen cyanide-free diet of *Setaria splendida* Stapf and cotton seed. The original three continued on their *Cynodon* diet.

Eight days later, on April 21st, each of the six sheep was drenched with a freshly prepared solution of sodium cyanide at the rate of *0·5 mg. per lb.* body weight, without toxic effect.

On April 22nd each received *1·5 mg. per lb.* without harm.

On April 25th each received *3 mg. per lb.* without this causing more than a slight and transitory response of deepened respiration, so that two hours after dosing all the animals were feeding or ruminating normally.

On April 27th, we raised the dose to *5 mg. per lb.*, and this time we set up very grave symptoms in all but one sheep. About one minute after dosing the breathing changed, and within two or three minutes the respirations were fast and irregular, even tumultuous and heaving. By this time the heart's action was much affected, the pulse being too fast and irregular for accurate counting. From four to eight minutes after the dose was given the heart's action was so weak that collapse and death appeared imminent, and an antidote of 1·5 to 2 c.c. of 10 per cent. solution of sodium nitrite was injected intravenously. This gave remarkably prompt relief: within two or three minutes the pulse had become almost regular at about 150 beats each minute ; the animal rose without much difficulty, and beyond smacking its lips and breathing somewhat heavily, seemed little the worse for its ordeal. Two or three hours after the dosing they were all feeding normally.

The sixth animal was a *Cynodon*-fed sheep weighing 60 lb. so that it was given 300 mg. of sodium cyanide in 10 c.c. of water. The response was modified respiration and heart action, but six minutes after the dosing the pulse was 120 beats per minute and only slightly irregular. It was to bring the treatment of this animal into line with that of the others, and not because we thought it would die otherwise, that we gave it 2 c.c. of 10 per cent. solution of sodium nitrite intravenously. Seen three hours later, it and its two mates had resumed their interrupted consumption of hydrogen cyanide-rich *Cynodon*.

Discussion

In an important article on hydrocyanic acid in grasses, Leemann (1935)[3] considers that 1 mg. per lb. of hydrogen cyanide administered *per os*, is a lethal dose for a sheep. One would expect the equivalent dose of 2·2 mg. sodium cyanide to be equally fatal; the fact that we gave six sheep 3 mg. per lb. without causing obvious symptoms, surprised us; in our experiment the M.L.D. of sodium cyanide lay between 3 and 5 mg. per lb. If there was any difference in susceptibility to such poisoning between animals fed for two months on hydrogen cyanide-rich diet and those fed for two weeks on hydrogen cyanide-free diet it was in favour of the former: all three *Setaria*-fed sheep appeared likely to die if not treated with nitrite after they had received sodium cyanide at the rate of 5 mg. per lb., whereas only two of the three *Cynodon*-fed animals were thus seriously affected.

In general, the opinion that *Cynodon* grass in spite of its high cyanide content is usually a safe and valuable fodder, is supported by our observations.

Acknowledgments.—We are indebted to Mr. H. R. Beakbane for fitting us out with a compact portable set of materials for testing the cyanide content of grasses in the field, and to the Director of Veterinary Services, Tanganyika Territory, for permission to publish these notes.

References

1 Evans, E. T. R. & Evans, W. C. (1948.) *J. Brit. Grassld. Soc.* **3.** 249.
2 Evans, W. C. & Evans, E. T. R. (1949.) *Nature.* **163.** 373.
3 Leeman, A. C. (1935.) *Onderstepoort J. vet. Sci.* **5.** 97.

OVERSEAS CHANGES IN LIVESTOCK IMPORT REGULATIONS

The Ministry of Agriculture and Fisheries have notified the Livestock Export Group of changes in the Canadian, Australian and South African import regulations for livestock.

The Canadian regulation relating to the johnin test is being replaced by the requirement that cattle and sheep from Great Britain (provided they are otherwise healthy) will be accepted for entry into Canada if they are accompanied by a certificate endorsed by a veterinarian employed full-time by the Ministry. In the case of animals exported through a quarantine station, this certificate will be issued by the Divisional Inspector (or deputy). In the case of animals shipped direct from Scotland (without entering quarantine) the certificate should be signed by a local veterinary inspector and endorsed by the Divisional Inspector.

Australia has now replaced the johnin test for cattle by the avian tuberculin test.

Cattle up to 30 months of age will now be accepted for entry into Canada from Great Britain whether negative or positive to the blood agglutination test for brucellosis, provided that they have been inoculated with *Brucella abortus* Strain 19 vaccine between the ages of four and eight months.

Veterinary examination of animals to be exported to the Union of South Africa may now be made within 14 instead of seven days of embarkation.

PRACTICAL ASPECTS OF ARTIFICIAL INSEMINATION IN KENYA *

By

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The purpose of this paper is to state the general principles of artificial insemination as they apply to its use in the field in Kenya, and to place on record knowledge gained by its practical application in the Trans Nzoia District.

The initial establishment of a centre demands first that it should be situated as conveniently as possible in the middle of a growing dairying-district, so that the greatest concentration of dairy-farms possible shall be included within a radius of 15 miles of the station. It would, however, be unwise to consider commencing unless a minimum of 1,200 cows can be registered at the start. This figure would allow for 750 cows being inseminated during the first year, the remainder being either pregnant at the time of registration, or not inseminated during the first year for some other reason, such as anoestrus, which condition is surprisingly common in this district. One inseminator is considered necessary for every 1,500 cows (approx.). It is considered that the African is not, as yet, sufficiently advanced to enable him to become a competent and reliable inseminator, but exceptions have been encountered.

The next step would be the circularising of all farmers within that area with an explanatory questionnaire, to ascertain the support likely to be expected and the breeds of sperm required.

The relative number of cows and heifers, and their types: *i.e.*, "grades," Boran, or native, etc., has an important bearing upon the matter since the success of an Artificial Insemination Centre appears to have some definite relationship to the breeds inseminated; for instance, Somalia heifers and Boran cows, and even "grade" heifers can be quite a problem owing to various factors not yet clearly understood.

It has been the practice here to examine all cows, other than heifers, before acceptance for registration. This has the advantage of culling, at the start, any animal which may be so diseased, from a breeding viewpoint, that it becomes clinically recognisable and consequently much time and money is saved to the Centre by refusing to accept the animal for registration. In practice, however, it is not quite so easy as that. The examination of several hundred head of cows is costly in both time and travelling. Many non-breeders remain clinically unrecognisable; on the other hand, many potential breeders are rejected for various reasons—such as a history of a retained placenta at the last calving, previous abortions, or a generally unhealthy feel to the genital organs—only to confound the "would-be" prognostician by conceiving to the next natural service of the farm bull. As a free service, however, it is very popular indeed with the farmers and is often the deciding factor in using artificial insemination, and the Centre. Used judiciously it is undoubtedly of real value alike to the Centre, the farmer and to the dairying-industry as a whole.

It is contended that veterinary supervision of the whole artificial insemination set-up is essential: to train personnel for the Centre, to direct its policy, to examine certain cows

* Paper submitted to the Annual Conference of the Kenya Veterinary Medical Association, March, 1949.

before registration and to advise upon the numerous difficulties, both technical and practical, that arise from day to day.

It is considered that the principle of charging a fee only when the cow is diagnosed pregnant—and it is believed that this Centre is the first to have tried it—is the most suitable one for this country when a full artificial insemination service is given to the farmer; which service will include free veterinary examination of all adult, non-pregnant cows at the time of registration. The *" No Calf—No Pay "* slogan is one that appeals to the farmer because it offers value for money. It should appeal to those running the Centre because their success is in direct proportion to the results they obtain, and it carries with it the courage of its own convictions, that artificial insemination, as practised by your particular Centre, *can* be, and *will* be successful.

The figure of 40s. per diagnosed pregnancy may be considered a high one since each heifer calf will cost about 80s., but it is contended that the cost would be only slightly less were the farmer to keep his own pure-bred bull of the same quality as those used by this Centre. Against this slight extra cost, on the credit side, can be placed the freedom from the worry of having to leave an animal worth perhaps £500 to the tender mercies of a less-than-half-trained African bull-boy. Most important of all is the freedom from breeding diseases which often entail the loss of both bulls and cows. Another big item on the credit side is the advantage of a routine pregnancy diagnosis throughout the herd, with the consequent rigorous check on non-breeders, and the ability to dry a cow off at the proper time. It should also be remembered that Continental charges are approximately between 30s. and 40s. for three inseminations, whether the animal conceives or not.

I would advise any Centre to keep one bull of each of the popular breeds locally. Once artificial insemination has become established in a district it follows that fewer bulls are kept by the community. The Centre does and should become the " vas deferens " of the district. In the event of the supply of imported sperm being suddenly cut off—as can happen from such causes as foot-and-mouth disease—at the Central Artificial Insemination Station at Kabete, it could well be catastrophic both to the district and to the principles of artificial insemination. This can be avoided only by keeping a reservoir of emergency bulls at the Centre. The sperm from these bulls could normally be used on the numerous cows that are difficult to settle, since after three services the cost of the C.A.I. Station sperm would prohibit its use on further attempts. It is extremely difficult to assess exactly how much sperm to order from Kabete per consignment and thus an extra supply from these local bulls will frequently save the Centre much embarrassment.

Advice is often sought by farmers joining a Centre as to whether or not they should retain a bull on the farm, or depend entirely upon the Centre. While the ideal demands that complete reliance should be placed on artificial insemination and the Centre, experience tends to show that it is unwise in many cases to advise a farmer to dispose of all his bulls, until it has been proved that artificial insemination is completely satisfactory in his particular case. It has been found that certain herds do not respond to artificial insemination at the beginning, although they may well show a very high conception ratio after a few months. No explanation can be given here for this phenomenon, but it has happened on three occasions among quite large herds in this district. Another point is what can be done with animals which are not accepted for A.I., and those which fail to conceive after a reasonable number of inseminations ; say three. The time must come when such animals automatically will be culled out of the herd, but until that happy day a bull of sorts is a necessity to many farmers using an Artificial Insemination Centre.

Advertising is undoubtedly as important in the realm of artificial insemination as it is in any other sphere. Judicious propaganda and informative articles will achieve this and raise the public-service value of the Centre at the same time.

So much for the establishment of a Centre. Much has been written on the technique of artificial insemination and so far as can be judged, there is little difference between the intra-uterine and the intra-cervical methods. One would expect the former to be more certain, especially when sperm can be directed into either cornu, but Anderson considers the difference to be negligible in this country.

Very little, if anything, has been written on the use of the rubber glove for artificial insemination and pregnancy diagnosis. The argument usually offered against its use is that of " loss of touch." The writer contends that if an effort is made at the beginning to work always through a glove no sensitivity will be lost, but, like every other intermediary instrument, practice is necessary before complete naturalness can be attained. It is surprising how many inseminators and pregnancy diagnosticians, both veterinarians and lay technicians, are guilty of offering the unprotected hand to the unprotected cow. Be it remembered that the rectum bruises easily and the nails cannot readily be relieved of their burden of bovine faeces.

The effect of transport upon sperm motility is both interesting and important to those centres situated at a great distance from the supply station. Kitale is 273 miles from the C.A.I.S. at Kabete and sperm really reaches us with a motility greater than 80 per cent. to 85 per cent. It is already 24 hours old upon arrival and thus one day of its potential life is lost to us. Greater care has, therefore, to be exercised in ordering to avoid wastage.

In this country it is necessary that lay inseminators should be capable of diagnosing pregnancy. In England, at least at those centres run by the Milk Marketing Board, the lay inseminators do not perform pregnancy diagnoses, the animal being presumed pregnant if it does not return to the bull for a period of three months. Should the farmer wish to confirm pregnancy he calls in his local practitioner. It is, of course, essential to the success of the *" No calf—No Pay "* scheme that a pregnancy diagnosis be made in every animal which does not return to the bull. It would, in this country, be difficult to assess, with any degree of accuracy, the success, or otherwise, of the Centre if such figures were not forthcoming. The principle of assuming every animal to be in-calf that does not return to the bull for a period of three months would, in my opinion, be very unreliable in a country such as this where so many non-pregnant animals fail to come into oestrus again for very long periods and where quite a high percentage of pregnant animals return to the bull at least once during their term of pregnancy. The interest aroused in the lay-inseminator by following his work through from artificial insemination to pregnancy diagnosis also constitutes an important point in favour of this method.

It is commonly stated that pregnancy can readily be diagnosed at eight weeks and even earlier. Whilst this is held to be true it is the experience at this Centre that some 10 per cent. of such early diagnoses are uncertain and

consequently demand re-examination at a later date. To avoid the time plus mileage wastage that this involves it has become routine to perform all pregnancy diagnoses at 12 weeks and over.

Special journeys are rarely made for the diagnosis of pregnancy unless a large number have to be done at one farm. Normally a post-card is sent to the farmer giving him the numbers of the cows to be examined and asking him to have them ready when next the inseminator calls to inseminate a cow. This works well and is a great time and money-saver.

When considering pregnancy diagnosis it is as well to note the marked difference between the breeds, *e.g.*, Guernseys normally carry the calf well forward in the belly and even the non-gravid uterus is often anterior to the pelvic brim in the multi-para. It is not intended to discuss these breed differences in this paper, but they do exist, and knowing these breed variations is often of great value in deciding whether, or not, a particular animal is pregnant when dealing with those not-infrequent tricky cases.

Another point that could open a field for discussion is the types that appear consistently in a herd, even a mixed herd ; *e.g.*, the sharply recurrent uterine cornua, usually characteristic of native breeds. It is considered possible that this characteristic shape of the uterus is not bred out in the first cross, as is the hump, but remains until the animal has reached a certain " grade," and then perceptibly adopts the shape of the European breeds.

Most of the important records and data required to run a Centre are set out in the Record Sheet [appended to paper as given] but this Centre is now recording the " Inseminator-Pregnancy " ratio, as it is felt that this will be of value in checking up in the event of any serious failures. It gives a clearer picture of the monthly results.

Recent records at this Centre have shown that artificial insemination in Kenya can and does compare very favourably with artificial insemination in other countries. For instance, the conception ratio in England for the year 1947 at Beccles Artificial Insemination Centre was 1·6 inseminations per calf. The Kitale figure for the period 1948 was 2·30. Considering the distance travelled by the sperm before use, the greater local mileage and the breeding troubles among dairy-cattle here, it is distinctly promising, especially since these are confirmed pregnancies.

Cattle sales have been found to affect an Artificial Insemination Centre in two ways. Firstly, because the selling of inseminated cattle before pregnancy has been diagnosed tends to upset the records. It does not, however, upset the financial aspect since any animal sold before examination is charged for as if it were pregnant. A charge normally is not made upon an animal which has died during pregnancy, although if an animal aborts after pregnancy has been diagnosed the fee normally is not refunded. Secondly, it has been found that some farmers are very quick to use the " sale-value " of such slogans as " In-calf to Insemination Bull," etc., whether or not a pregnancy diagnosis has been made. Disciplinary action may be taken by the Committee in such cases.

No Sunday service is given at this Centre, but the difficulty is overcome by giving priority on Monday morning to all cows that come into season on a Sunday. The Americans claim that insemination on the day following oestrus is satisfactory, but sufficient data is not yet to hand to enable one to express an opinion as to its application to this district.

Finally, it has been found that where telephone communication is lacking in a district the carrier-pigeon may be used to carry the message from farmer to Centre to notify that a cow is ready for service. All demands have to reach the Centre before 9.30 a.m. in order that the day's rounds may be planned suitably and it has been satisfactorily proved in this district that carrier-pigeons execute this with greater speed and certainty than the average native-herd-boy on a bicycle. It is hoped, in the near future, that this pigeon service will be extended to embrace the carrying of concentrated sperm from the C.A.I.S. at Kabete to the Kitale Insemination Centre.

AN OUTBREAK OF BORNA DISEASE IN TRIPOLITANIA *

By

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and

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An outbreak of Borna disease was confirmed recently in the villages of Breviglieri, Tazzoli, Marconi and Corradini situated in the Eastern Province of Tripolitania (the Eastern part of Libya).

HISTORY

Enquiries made in the infected area showed that Borna disease was present there in 1943. In that year the Eighth Army were just occupying the territory, veterinary services were disintegrated and there are no records giving details of the outbreak. Curiously enough, the 1943 outbreak struck the private estates and not, as in the recent outbreak, the colonist villages.

In the outbreak now described, Borna disease was first suspected by this Department as early as March, 1949, following the anatomical-pathological examination of the 11th out of a series of deaths among horses. The first horses to die in this way were believed by the Italian Veterinary Officer of the district to have died of grass intoxication, hepatitis and finally even of anthrax.

Up to June 30th 40 horses had become sick with Borna disease of which 27 had died. The infection rate among horses was about 17 per cent. and the mortality rate was about 72 per cent. The maximum mortality rate was in March when it reached 93 per cent. Five mules out of the 110 in the district (all unvaccinated) took the infection and of these three died and two survived.

COURSE AND SYMPTOMATOLOGY

The course was acute for three or four days or chronic for two or three months. Borna disease manifested itself in two forms, a paralytic and a furious.

The former is characterised by general weakness, inappetence, deadening of the senses, stomatitis, excessive salivation, and conjunctivitis with running eyes. Death

* Translation from Italian by Cpl. C. S. Cullen, R.A.V.C.

is preceded by paralysis of the hind limbs, the rectum, the bladder and finally the heart.

The furious form is manifested by symptoms similar to those of rabies, during which period if the animal is tied up it throws its head about and bites at its own body. It batters its head against the wall or manger, often damaging its head seriously. If the animal is free it gallops away drunkenly for mile after mile until it drops exhausted.

In several cases the disease appeared in a rapid and abortive form, the history being one of 24 hours' duration from the onset to the final disappearance of symptoms.

Diagnosis

Joest-Degan inclusion bodies were found in the nervous cells of the hippocampi of dead horses.

Rabbits were inoculated by endocerebral and endocular routes and they all died after 50 days of inoculation.

The only rabbits that lived were those inoculated with serum.

Epidemiological Observations

On the basis of epidemiological observations made it seems that the disease was carried by neither mosquito nor tick. Private and Police animals were untouched even though they were in the centre of the infected area.

The virus was probably carried in the food and drinking water, and on this account it is held that the virus found ingress through the alimentary tract—principally through the oral cavity.

The area abounded with rabbits, poultry, rats and sheep and these could have been possible reservoirs for the virus.

There were no cases of human beings becoming infected.

Prophylaxis

The pathological laboratory of this Department prepared a vaccine consisting of brains of infected horses emulsified with 10 per cent. phenol solution in a proportion of 80 per cent. solution to 20 per cent. brain. The vaccine at a dosage of 10 c.c. was inoculated subcutaneously in the neck, three times at intervals of five days. In all, 203 horses were inoculated of which only two gave a serious local reaction, one of these dying from natural causes, the other surviving.

The vaccine conferred a good immunity and the general course of the disease changed from lethal to chronic, but we believe that had we been able to employ a living but avirulent vaccine, even better results would have been obtained.

The necessary measures of hygiene and prophylaxis were carried out on a large scale. Prohibition orders were issued for the movement of equines in the area ; disinfection and disinfestation of buildings was performed with creosol and DDT. The export of locally grown forage from the area was prohibited.

With regard to therapeutic treatment, the use of large doses of pot. iodide given orally gave better results than other substances such as hexamine.

The Horse Association of America, formed 30 years ago with Mr. Wayne Dinsmore as secretary, is to dissolve. This decision was reached at the 30th annual meeting held on the last day of November. —*Scottish Farmer.*

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Weekly Wisdom

Broadly speaking, we are in the middle of a race between human skill as to means and human folly as to ends.—Bertrand Russell, o.m., f.r.s. (Lloyd Roberts Lecture, 1949, Royal Society of Medicine).

CLINICAL COMMUNICATION

A CASE OF *Clostridium haemolyticum* (Cl. oedematiens D.) INFECTION IN A COW

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Introduction

A condition known as infectious ictero-haemoglobinuria was described in the United States by several authors (Meyer, 1916 ; Mack & Records, 1917). In 1926, Vawter and Records isolated an organism, which was identified as *Clostridium haemolyticum*, from cases of this disease. The condition affects mainly cattle but several cases in sheep, and one in a pig have been described by Records and Huber (1931). In the United States the disease occurs only in certain well-defined areas. It has been seen in mountain valleys in the Sierra Nevada and the coast ranges of North America and in the Andes. Vawter and Records (1926) reported that the disease was of sudden onset and ran a rapid course. There was high temperature and haemoglobinuria ; occasionally there were bowel haemorrhages.

So far as is known, the disease has not previously been recorded in Great Britain. One of us (M.A.S.) investigated a similar condition in the Isle of Arran in 1946, but unfortunately was unable to isolate the causal organism. The present case occurred in the Lake District.

Clinical History

The only clinical information available to us was that several young cattle whilst grazing on the fells, had died fairly suddenly. One complete carcase was received for examination.

Post-mortem Findings

The animal, a heifer, was in good condition. The blood had not clotted.

Abdominal Cavity.—A blood-stained peritoneal fluid was present in the abdominal cavity. There was a patchy catarrhal gastro-enteritis with a few areas of acute haemorrhagic inflammation. The mesenteric lymph nodes were enlarged, oedematous and congested, whilst a few small haemorrhages were present in some of them. The spleen was not enlarged, but the substance was soft, pulpy and congested. The liver showed a large, sharply demarcated infarct, approximately three inches in diameter, the edges of which were congested and contrasted strongly with the pale toxic liver. The liver substance was friable. The gall bladder was distended with dark bile (there was no obstruction in the bile ducts) and the hepatic lymph node was enlarged and congested. The kidneys were pale in colour, the capsule stripped easily. The urine in the calyces and in the urinary bladder was normal in appearance.

Thoracic cavity.—A little blood-stained fluid was present in the pleural cavity. The left lung showed hypostatic congestion, otherwise the lungs were apparently normal. The bronchial and mediastinal lymph nodes were enlarged, oedematous and haemorrhagic. The pericardium was dull and contained several mls. of a blood-stained fluid. Large ecchymoses were present in the pericardial fat and on the coronary grooves. The endocardium and the lining of the aorta were stained pink.

Brain.—The meninges were hyperaemic and oedematous. On slicing the brain, multiple and extensive haemorrhages were noted, mainly in the cerebellar peduncles, the Pons and the medulla oblongata. Lysed blood had tracked back into the spinal cord.

Bacteriological Examination

Direct smears from the infarct of the liver revealed large Gram-positive bacilli, morphologically resembling *Clostridium oedematiens*. Many of the bacilli had terminal or sub-terminal spores.

Material from the hepatic infarct was sown on blood-agar plates and into Robertson's cooked-meat medium, containing 1 per cent. glucose, and cultivated under anaerobic conditions. Examination of the plates after 48 hours' incubation at 37° C. revealed flat, greyish colonies with crenated edges and a well-marked zone of β-haemolysis. The organism, which was a very strict anaerobe, produced acid and gas in glucose, but did not ferment lactose, saccharose, mannite, maltose, salicin or glycerol.

Pathogenicity

Pathogenicity of this organism was tested on guinea-pigs and rabbits. The animals, which died within 24 hours, showed lesions similar to those described by Vawter and Records (1926).

Summary

The isolation of *Cl. haemolyticum* from a liver infarct in a heifer is reported. The authors would be grateful for any material from any similar case which may be encountered in general practice.

Acknowledgment.—The authors are extremely grateful to Dr. Oakley and his colleagues of the Wellcome Research Laboratories, for confirming the identification of this organism as *Clostridium haemolyticum* (*Cl. oedematiens* type D.).

References

Mack, W. B., & Records, E. (1917.) *J. Amer. vet. med. Ass.* **52.** 143.
Meyer, K. F. (1916.) *Ibid.* **50.** 552.
Records, E., & Huber, M. (1931.) *Ibid.* **78.** 863.
Vawter, C. R., & Records, E. (1926.) *Ibid.* **68.** 494.

£1,000 GIFT FOR A.H.T. POULTRY RESEARCH

To help in providing the necessary income to enable the Animal Health Trust to carry out important research work on behalf of the poultry industry, Stonegate and South-Eastern Farmers' Co-operative Society, Ltd., have presented the Trust with a cheque for £1,000. The money was provided through the members agreeing at their annual meeting to have deducted 2d. per dozen eggs from one week's supply sent in during next spring.

The cheque was presented to Dr. W. R. Wooldridge, scientific director of the Animal Health Trust, at the annual meeting held at the Society's new packing station, Bridge Street, Wye, which was opened by Lord Cornwallis.

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The full verbatim transactions of the second Commonwealth and Empire Health and Tuberculosis Conference, held in London last July, have now been published under the title "Tuberculosis in the Commonwealth." The volume has been printed at Papworth, the community for tuberculous patients, and is obtainable from the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, W.C.1, price 15s.

ABSTRACTS

[I. Experiments on the Transmission of *Streptococcus agalactiae* Infection by Milking with Infected Hands. Lancaster, J. E. & Stuart, P. (1949.) *J. comp. Path.* **59.** 19.

[II. Some Factors which may be Concerned in the Susceptibility of the Bovine Udder to *Str. agalactiae* Infection. Stuart, P. & Lancaster, J. E. (1949.) *Ibid.* **59.** 31.

I.—The authors have made observations on the transmission of *Str. agalactiae* by means of hand milking in an experimental herd of 18 cows. The hands of the milkers were deliberately contaminated with milk containing *Str. agalactiae* type IIIa, obtained from a donor cow. This secretion was smeared on the teats of all the cows immediately before each hand milking. The observations, including closely spaced bacteriological tests, were continued for 15 weeks.

The herd was composed of seven first calf heifers, five second calvers and six old cows. Five of the six older cows had suffered from previous infections with *Str. agalactiae* type Ib, which had been cured by intra-mammary therapy.

All the older cows readily became infected, five of them within the first five weeks of the experiment. The heifers were relatively resistant; only two of them had become infected by the close of the observations. The second calvers were intermediate in resistance. *Str. agalactiae* persisted on the skin of the teats of the susceptible and resistant cows.

The authors discuss whether the greater susceptibility of the oldest group was a function of age or due to an inherent susceptibility.

II.—In the course of the previous experiment, observations were made on the correlation of teat injuries with quarter infections, the correlation between teat patency and susceptibility of quarters, and the effect of other illness on susceptibility to infection with *Str. agalactiae*. No significant influence by any of these factors could be demonstrated.

Fourteen cows from the previous experiment were treated with penicillin and freed of infection with *Str. agalactiae*. These animals were then re-exposed to infection by the introduction of *Str. agalactiae* up the teat canal, thus overcoming the possible barrier of the teat sphincter. Quarters which were most susceptible to infection by hand milking were also most susceptible to infection by infusion.

Attempts were made to set up mastitis by the infusion of sterile mastitis secretions and filtrates in four cows. No mastitis resulted.

D. L. H.

[These two papers describe well designed experiments which are considerable contributions to our knowledge of *Str. agalactiae* infections. They illustrate the fruitful results likely to be obtained by the experimental approach to the problem of mastitis, an approach which has been used too infrequently in research on this problem. The articles should be read in the original by all interested in mastitis. —*Abstractor*.]

Wrexham Borough Health Committee has decided to give wholehearted support to a campaign for the eradication of bovine tuberculosis. The chairman, Alderman C. O. Jones, commented that the percentage of tuberculous cattle had almost doubled in five years although the position of the Wrexham Abattoir seemed to have improved.

REVIEW

[**Thompson's Elementary Veterinary Science.** (Sixth Edition) by A. C. Duncan, B.Sc., F.R.C.V.S. Pp. viii + 474, with 81 illustrations. Baillière, Tindall & Cox, 7 & 8, Henrietta Street, London, W.C.2. Price 15s. net.]

In writing a book for students the author is always confronted with the problem of deciding what should and what should not be included. The emphasis in practice changes from year to year as new methods are introduced and research progresses. In particular does the difficulty arise when the veterinarian has to decide what the agricultural student should know. The field of veterinary science is linked so intimately with agriculture that there is no distinct dividing line and in order that the future farmer shall be best equipped to maintain his animals in health and to execute measures of disease control, he must during his student days be trained within limits to understand veterinary problems.

To those who teach the subject the lack of a suitable veterinary book for the agricultural student has been only too obvious for the last ten years, during which period enormous progress in preventative medicine has taken place. It is all the more disappointing, therefore, to discover that the new venture in this direction falls very much below modern requirements. Thompson's veterinary lectures were, no doubt, ideal for many years after they were first published—this is the sixth edition—but have for over a decade been largely out-dated. Our regret is that the revised version is still very much out of date, far too great an emphasis being placed on the horse; over one-quarter of the book deals with its ailments and systems of shoeing, etc. There is a section on materia medica which can well be regarded as redundant to-day when the farmer secures ready-made preparations from his veterinary surgeon, the chemist, or, all too frequently, from the quack medicine vendor. Dissertations on the different "systems" no longer have an appeal. This is a method dull enough for veterinary students, but for agricultural ones with no pathological or physiological background, almost tedious. The era of preventative medicine in veterinary science dawned in the last century when Gamgee introduced the slaughter policy in 1865 and has been developed from time to time as new knowledge became available. Some might say that the profession as a whole only became conscious of the need for an adjustment of outlook when the last war started, as a result of the efforts of those leaders of the N.V.M.A. who saw the need for a closer integration of the profession with the agricultural community. We have now to take the latter along with us by training them in our ways and our requirements. If we do not, we shall not justify our existence by results. In a sense the farmer is the tool and must be the willing co-operator in any scheme for the maintenance of health and the control of disease. It is thus all the more disappointing that this latest edition can have little influence on this desirable trend.

LITTER RECORDING PROPOSALS

The institution of an official system of litter recording for pigs was discussed at the fifth annual meeting of the Scottish Pig Producers Association in Glasgow. General agreement was expressed that such a system should be introduced in the interests of the industry, but there was a divergence of opinion as to whether the National Pig Breeders' Association or the Government should be responsible. It was agreed that the Scottish Association should support whatever proposals were made by the N.P.B.A.—*Farmers' Weekly.*

VETERINARY SURGEONS ACT, 1948

Supplementary Veterinary Register

The Council of the Royal College of Veterinary Surgeons have directed the Registrar under the above Act to register in the Supplementary Veterinary Register the names of the persons set out below.

This is the third list of registrations and the absence of the name of any person who has made application in prescribed form before the prescribed date does not imply that such applicant has been refused registration.

The third list consists of further persons in whose cases the Council are satisfied that the requirements of the Act have been met.

The date of registration is Friday, December 23rd, 1949.

Further lists of registrations in the Supplementary Veterinary Register will be published.

Third List of Registrations

Names and Places of Practice

Axworthy, Roger H., The Standard Laboratory, 45, Castle Street, Reading.

Coveney, Frank, Frandol, Headcorn, Kent.

De Relwyskow, Edward John, 115, Camberwell Road, London, S.E.5.

Lotcho, Leslie Charles, 381, Lewisham High Street, S.E.13.

Low, Leonard Allfrey, Scaldwell, Northants.

Mackay, Alfred Andrew, The Standard Laboratory, 45, Castle Street, Reading.

Mant, Charles Edward, "Gedding," Storrington, Sussex.

Marshall, Ralph Augustine, N.C.D.L. Animal Clinic, 442, Garratt Lane, London, S.W.18.

Morris, Frank, 68, High Street, Wem, Shropshire.

Mumford, Richard Francis J., Hurst Lodge, 326, London Road, Waterlooville, Hants.

Murray, John, Preyste House, Petworth, Sussex.

Nicholas, John William, 62 Park Road, Hounslow, Middlesex.

Parker, Miss Rosa F., 61, Daws Lane, Mill Hill, N.W.7.

Penhale, Arthur Douglas, 406, Ashton Old Road, Openshaw, Manchester.

Pickworth, William Henry, 93, Bescot Road, Walsall, Staffs.

Powell, Basil Myrton, Grenville Lodge, Newport Pagnell, Bletchley, Bucks.

Van Raat, Henderikus Wilhelmus, 4, Approach Road, Wandsworth Common Station, S.W.12, *and* 231a, Streatham Road, London, S.W.16.

Roberts, Cecil Harvey, 11, Bute Street, South Kensington, S.W.7.

Sanders, Robert Cecil, Grandison Villa, Pound Street, Moreton Hampstead.

Sanders, Thomas Elson, Pentreve House, Bow, Crediton.

Sanders, William Ernest, 1, Western Road, Crediton.

Sanders, William Henry, Grandison Villa, Moreton Hampstead.

Scott, Harold Spreat, 158-160, Chingford Mount Road, South Chingford, E.4.

Shepherd, Walter, 168, Gipsy Road, Welling, Kent; *and* 2, Avery Hill Road, New Eltham, S.E.9.

Slee, Fernley Walter, Albert House, Station Road, Plympton.

Smith, Charles Newman, "The Limes," Wrentham, Beccles, Suffolk.

Stear, William Charles, "Vine Cot," Aveton Gifford, Kingsbridge, Devon.

STOREY, James Charles, 229, Merton Road, Southfields, S.W.18.
THOMPSON, Sackville Harry, 58, Wellington Road South, Stockport.
TINGLEY, George Walter, Millstone Farm, Chailey, Sussex.
WAKE, Stanley Farrin, Terrington St. Clement, Nr. Kings Lynn.
WALDER, Geoffrey Torrington, The Old Martyrs, Crawley, Sussex.
WALLER, John William, 342, South Lambeth Road, S.W.8.
WOOD, Redvers Norman, 62, Rochdale Road, Oldham, Lancs.

NOTES AND NEWS

Diary of Events

Jan. 11th.—Meeting of the Editorial Executive Committee, 2.30 p.m.
Jan. 11th and 18th.—Meetings of the Royal Microscopical Society at B.M.A. House, Tavistock Square, W.C.1, at 6 p.m. 5.30 p.m. respectively. For programme of meetings apply to the Hon. Secretaries of the Society at the address given.
Jan. 11th, 12th and 13th.—**Quarterly Meetings of Council, R.C.V.S.**
Jan. 13th.—R.V.C. Students' Society Annual Ball, Grosvenor House, Park Lane, W.1.
Jan. 18th.—Meeting of the Southern Counties Division, N.V.M.A., at Southampton (Polygon Hotel), 6 p.m.
Jan. 19th.—Meeting of the Western Counties Division, N.V.M.A., at Exeter (Royal Clarence Hotel), 2 p.m.

Next Meetings of Council and Standing Committees, N.V.M.A.

(*Committees at 36, Gordon Square, W.C.1*)

Wednesday, February 8th
11.0 a.m. Parliamentary and Public Relations Committee.
2.0 p.m. Organising Committee.
4.15 p.m. Home Appointments Committee.

Thursday, February 9th
10.0 a.m. Veterinary State Medicine Committee.
2.0 p.m. General Purposes and Finance Committee.

Friday, February 10th
11.0 a.m. **Council Meeting** at the Connaught Rooms, Great Queen Street.

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The New Year Honours

C.B.E. for Mr. Howard Dawes and Mr. E. C. Lloyd

Their colleagues in the profession will wish us to express on their behalf, to Mr. Howard W. Dawes, F.R.C.V.S., President of the Royal College of Veterinary Surgeons, 1946-49, and to Mr. Ernest Clifford Lloyd, M.R.C.V.S., Deputy Chief Veterinary Officer, Animal Health Division, Ministry of Agriculture and Fisheries, warm congratulations on the conferment upon them by His Majesty of the high award of Commander of the Most Excellent Order of the British Empire, announced in the list of New Year Honours issued on Monday last.

MR. HOWARD W. DAWES, F.R.C.V.S.

There comes a time in the history of every nation, community and professional body when circumstances require a leader of outstanding capabilities: a man of mature judgment and powers of leadership.

The years 1946-49 are amongst the most important in the history of the veterinary profession. The final negotiations for the Veterinary Surgeons Bill were taking place. Then the Act itself having passed through Parliament had to be implemented. During this period Mr. Howard Dawes was President of the Royal College of Veterinary Surgeons and the esteem in which he was held by his colleagues can be gauged by his re-election to the office of President during these crucial years.

It is with particular pleasure, therefore, that the veterinary profession will learn of Mr. Dawes' appointment as Commander of the Order of the British Empire.

During the period of his Presidency Mr. Dawes not only had to exercise the greatest responsibilities but also to spend much time in London whilst still carrying on veterinary practice.

The honour paid to him, therefore, is the more pleasing inasmuch as it is bestowed upon a member of that branch of the veterinary profession, the general practitioner, which is the mainstay of the profession and to whom public reward is seldom given.

Mr. Dawes' prior activities as a member of Council, R.C.V.S., of Council N.V.M.A. (representing the Midland Counties Division as he has done for so many years) and as a practitioner who has rendered able service to his profession in veterinary and various allied spheres of work and interest were recounted in the biography published in our issue of August 24th, 1946, at the time of his election to the Presidency of the Royal College.

MR. E. C. LLOYD, M.R.C.V.S.

Mr. E. C. Lloyd, who was born in 1889, was educated at the Central Foundation School, London. After graduation at the Royal Veterinary College in 1910, he entered general practice as an assistant at Lewes, proceeding thence to Peterborough. From the latter, Mr. Lloyd joined the veterinary staff of the Ministry of Agriculture on June 23rd, 1914. Regular promotions followed during his period of service—which was interrupted from 1918 to 1919 when he held a commission in the R.A.V.C.—and in 1937 he was appointed to his present post as Deputy Chief Veterinary Officer when a second appointment of that nature was established preparatory to the expansion of the Department under the Agriculture Act. At that time the other Deputy Chief, now Mr. J. N. Ritchie, was Mr.—now Sir—Daniel Cabot, who became Chief Veterinary Officer in 1938, being succeeded on his retirement in 1948 by Professor T. Dalling.

We are also glad to note in the Colonial Office List, the name of Mr. Robert Alston Hammond, M.R.C.V.S., Deputy Director of Veterinary Services, Kenya, as a recipient of the O.B.E.

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Collection of Accurate Data on the Incidence of Disease

Members will have seen full particulars of this project in *The Veterinary Record* of October 1st, 1949 (No. 40, Vol. 61, page 614) and sundry references to it in subsequent issues. The general idea is to obtain an overall picture of the incidence of disease in farm animals from the completion of four forms over a period of twelve months, these to be filled in by the veterinary surgeon in practice and the herd-owners who have agreed to co-operate with him. Although there has been quite a good response to the request for volunteers from among veterinary surgeons in practice, many more are still needed. Any member interested is asked, therefore, to get in touch with the General Secretary, N.V.M.A., 36, Gordon Square, London, W.C.1, without delay, asking for full particulars and specifying the number of forms required.

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PERSONAL

MR. PHILIP VINCENT: THE DOYEN OF THE PROFESSION

Since the death, in August last, of Mr. Samuel Laxton Hames, Mr. Philip Vincent, M.R.C.V.S., of 33, Sackville Road, Hove, 3, Sussex has headed the list *Chirurgorum Veterinariorum Collegii Regii Seniores*. The Registrar R.C.V.S. reports that his records appear to show that Mr. Vincent is also the oldest living veterinary surgeon.

Mr. Vincent, who is aged 95, was admitted to membership on January 4th, 1877, at the Royal Veterinary College of London.

Although Mr. Vincent is confined to his bed he still has a very active mind, inasmuch as he is composing poetry and learning languages. At the New Year we extend to him our congratulations and good wishes.

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Births.—CROWTHER.—On December 19th, 1949, at Nicosia Hospital, Cyprus, to Betty, wife of R. W. Crowther, B.SC., M.R.C.V.S., a daughter—Heather Margaret.

FRASER.—On December 19th, 1949, at the Red House Nursing Home, Bletchley, to Dorothy, wife of J. R. Fraser, M.R.C.V.S., Bletchley Road, Bletchley, a son.

HEATLEY.—On December 18th, 1949, at The Limes, Acle, near Norwich, to Susan, wife of D. Heatley, M.R.C.V.S., a daughter.

LAWSON.—On December 12th, 1949, to "Jimmy," wife of J. Lawson, M.R.C.V.S., D.V.S.M., 39, Victoria Street, Stromness, Orkney, a sister for John (Isobel Anne).

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Marriage.—SMITH—BADDELEY.—The wedding took place on December 22nd, 1949, at Finsbury Park Methodist Church, between Frederick Roy Smith, only son of the Rev. and Mrs. Smith, of Dorchester, and Elizabeth Baddeley, niece of Mr. and Mrs. J. Copeland, of Finsbury Park.

. . . . . .

Miss Jean Murphy a Solicitor.—Their many friends in the profession will learn with pleasure that Miss Jean Isobel Mary Murphy, daughter of Mr. C T. Murphy, M.R.C.V.S., of Colchester, has been successful in the Law Society's Final Examination for qualification as a solicitor, held last November. It will be of interest to our Scottish readers to know that Miss Murphy is the grand-daughter of the late Professor Murphy of the Glasgow Veterinary College.

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R.C.V.S. OBITUARY

BLOXSOME, Gerald W., Capt. late R.A.V.C. (T.F.), Rosemullion, Church Lane, Southwick, Sussex. Graduated London, July 13th, 1898. Died December 23rd, 1949.

NIVEN, Alexander, 5, High Street, Inverurie, Aberdeenshire. Graduated Edinburgh, May 22nd, 1907. Died December 25th, 1949, aged 71 years.

PATERSON, Alexander. Graduated Edinburgh, May 28th, 1890. Died June 15th, 1949, at Timaru, New Zealand. (Information just received.)

The Late Mr. P. T. Lindsay, M.R.C.V.S.

An Appreciation

As recorded in your last issue, the death occurred on December 21st last of Mr. P. T. Lindsay at his home at Woolton, Liverpool, after a brief illness, and the news will have been received with great regret by his numerous friends throughout the profession.

Mr. Lindsay had practised for some years at Woolton, where he had an extensive agricultural practice. He was a most capable practitioner, who never spared himself, and although his health had not been robust in recent years, he conducted his practice up to the time of his illness—often single-handed.

Sound in his views, he had a particularly broad outlook on life in general; whilst he took pains to keep himself up to date in all matters concerning his profession, his interest extended into many other spheres. An extensive reader, he could discourse on most subjects, and his views were sought by many of his clients on matters other than veterinary. He enjoyed the utmost confidence of all members of the agricultural community with whom he came into contact, and there was ample evidence of the esteem in which he was held in the large number of them who attended the service held in his memory at Sefton Park Presbyterian Church.

He was a familiar and most popular figure over many years at the Annual Congress of the Association, and he was an active member of the Lancashire Veterinary Association, having acted as its Treasurer for some years. Somehow it seems difficult to imagine a meeting of the Lancashire without him, for he was a regular attender at its meetings, and was held in most affectionate regard by all its members. Efforts to persuade him to occupy the President's chair of that body failed, for he very modestly preferred to remain in the background.

He had a delightful sense of humour and endeavoured to conceal a great-hearted. generous nature by posing as a thrifty and careful Scot—one had not to know him long to realise that this was purely a pose.

To have enjoyed the friendship of Peter Lindsay was indeed a great privilege, and although he has gone from our midst, many of us will long retain happy memories of a great friend and colleague.

E. R. C.

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GENERAL OBITUARY

Dr. J. M. Caie, C.B., M.A., B.Sc., LL.D.

We record with much regret the death, which occurred suddenly in Aberdeen on Thursday, December 22nd, of Dr. J. M. Caie, former Deputy Secretary of the Department of Agriculture for Scotland. One of the many members of our profession who knew Dr. Caie intimately writes that all who did so had a high opinion of his ability and also "found him a very agreeable person with whom to work," adding: "Though he had retired from the Department some little time and was 71 years of age, he seemed extremely fit the last time I saw him about a fortnight ago and so his sudden death has been a distinct shock." It was towards the end of his life that his old University, Aberdeen, conferred upon him the degree of LL.D.

Those present at the N.V.M.A. Congress at Edinburgh in 1947 will recall the witty response to the toast of "Our Guests" with which, towards midnight, Dr. Caie refreshed the company at the annual dinner.

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MEMBERSHIP PERCENTAGES OF THE B.M.A. AND THE N.V.M.A.

According to the *British Medical Journal*, membership of the Association in September last was 62,334, or 77 per cent. of the total number of members of the medical profession in the United Kingdom. The total number of members of the Royal College of Veterinary Surgeons whose names appear in the Register for 1949 is 4,762. Of that number 3,407, or 71 per cent., were members of the National Veterinary Medical Association at the time of the last membership report to Council, in November, 1949.

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B.M.A. PUBLIC HEALTH COMMITTEE AND THE JOINT REPORT ON MILK

In its issue of December 31st, the *British Medical Journal* states that at a meeting of the Public Health Committee of the Association held on December 16th, Dr. C. Metcalfe Brown presiding, the report of the Joint Committee of the British Medical Association and the National Veterinary Medical Association on the provision of safe milk of high quality was received. The Chairman said that this was a first-class report, on which both associations were to be congratulated. It was stated that the report had had extremely good publicity. It was agreed that copies should be sent to all B.M.A. Branches and Divisions, and that a request be made to them to ensure as far as possible that medical representation and advice were available on the county milk and dairies advisory committees. Copies of the report will also be sent to all medical officers of health.

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TUBERCULOSIS ERADICATION: COMPENSATION PROPOSALS

Following upon the recent announcement by the Minister of Agriculture that the proposed date for the introduction of tuberculosis eradication schemes for cattle is to be October 1st, the National Farmers' Union of England and Wales has been in touch with the appropriate Department with a view to a resumption at an early date of the discussions on the compensation proposals under the scheme. The discussions, when resumed, will be between the Union, the National Farmers' Union of Scotland, the Milk Marketing Board and the Ministry of Agriculture.

* * * * *

AIR TRANSPORT AND INSECTS OF AGRICULTURAL IMPORTANCE

Considerable attention has been given in recent years to the risk of spreading disease-carrying insects by the agency of air transport. Almost no consideration has been given to the possible introduction of new agricultural pests by the same means, although the development of new routes and the short time taken to traverse great distances are unquestionably adding greatly to the risk of such invasions. The Commonwealth Institute of Entomology has recently published a small pamphlet (pp. 12, price 1s. 6d.) on this subject by Dr. W. A. L. David. Up to the present time, although many disastrous introductions have occurred both in Europe and in the United States within the past 50 years, there has been no authenticated case of air transport having been responsible. But insects of many kinds are found surviving in aircraft, and the danger will increase. Tolerably efficient methods of freeing aircraft of flies and mosquitoes are being worked out; but these are certainly not lethal to more resistant insects—even when they are properly applied. Perhaps the deposition of a lasting film of insecticide is the most promising line of development. Some modifications in the planning of the interior of aircraft could reduce the number of lurking places for insects and thereby make disinfestation easier.—*Nature.*

MINISTRY OF AGRICULTURE NEWS SERVICE

Dairying Looks Ahead

A recent conference at Nottingham arranged by the National Agricultural Advisory Service, in conjunction with the Central Landowners' Association, National Farmers' Union and the National Union of Agricultural Workers, gave those engaged in dairying an opportunity of hearing authorities on the various aspects of the new regulations. Mr. C. A. Scarlett, Provincial Advisory Bacteriologist, drew attention to the fact that the dairy industry in this country has a daily turnover of nearly £500,000. Most dairy farms are small units and from the point of view of economic efficiency are working under great difficulty. Explaining the new legislation, Mr. Scarlett said that it brought into effect the policy set out in the White Paper of 1943 for improving the quality of the nation's milk supply. Full details of the new legislation are to be found in the recent Milk and Dairies Regulations,* the ultimate object of which is to ensure better milk, and every encouragement will be given to all those genuinely trying to comply with the regulations.

Mr. F. A. Davidson, Divisional Veterinary Inspector, of the Ministry of Agriculture, dealing with dairy building adaptations, referred to the lack of uniformity in the construction of dairy premises. He said that too little consideration has been given to the cow and to practical dairy management. In some instances costly reconstruction has not resulted in cleaner milk or healthier cows, or any reduction in labour, which must be the objectives of all improvements. The immediate problem was how to improve existing premises, with a minimum of interference to walls and roofs. Most producers have herds of less than 20 cows, with very little arable land. Their problem is mainly one of altering existing buildings to give the necessary improvements at reasonable cost. Yards, parlours and bails all have their points, but their adoption is limited to a small proportion of the country's dairy farms.

Mr. Davidson went into the details of construction, his main points being the importance of correct ventilation and lighting; the need for further investigation into the problem of non-skid floors; the quantity and quality of the water supply; proper construction of manure pits, adequately roofed and drained; two or more isolation boxes, according to the size of the herd, with paddocks and separate drainage, and simplicity in lay-out and equipment.

Finally, Mr. J. N. Ritchie, the Ministry's Deputy Chief Veterinary Officer, spoke on cleaning up the dairy herd, with special reference to tuberculosis.

He emphasised the value of an attested herd. The tone of the whole farm is improved. The farmer takes a greater pride in his stock and the workers are more interested. Animals are generally healthier and less prone to go off colour, and they fetch better prices.

Two methods of establishing a tubercle-free herd were outlined. Where one group of animals in a herd, usually the cows, shows a high proportion of reactors and the young stock are free or nearly free from infection, a tubercle-free herd can be established in a short time by removing all the animals in the heavily infected group and replacing them by attested cattle after the buildings occupied by the reactors have been thoroughly disinfected and manure properly disposed of. The young stock, less any reactors among them, are retained and kept separate from the attested cattle until they have passed a further test. This method is being adopted on an increasing scale. The other method, which is usually slow, but requires less initial capital outlay, involves the removal of reactors and frequent retesting—and removal of any further reactors—until the herd is clear. At present there are nearly 1,750,000 attested cattle in England, Scotland and Wales, with 90 per cent. of cattle attested in Ayrshire, 77 per cent. in Cardigan and 72 per cent. in Carmarthen. The average for the whole country is 19 per cent.

The next stage is the eradication of the disease from areas. The Minister of Agriculture recently announced that a scheme for the eradication of tuberculosis on an area basis will be introduced on October 1st, 1950. Mr. Ritchie urged all milk producers to become attested as soon as possible and mentioned the possibility of some direct incentive to attestation being given under the area scheme for all cattle producers, including owners of beef and rearing herds.

. . . . .

Less Waste in Grazing.—In recent years dairying has spread to areas where at one time the pastures did not provide good grazing: with the improved strains of grasses now available, milk can be produced over a wide range of soils. On the best farms marked progress has been made in raising the output from grassland, but average pastureland still produces much less than average land under arable crops. Much grassland is badly farmed: lavish use of fertilisers on arable and niggardly application to pasture is all too common.

A system under which the grassland is confined to a number of large fields stocked day and night leads to much wastage of grass in a good season. For only a short period during the spring flush is the herbage of really high milk-producing quality. Neither scanty nor over-abundant grass produces the maximum milk output and wise management is essential if cows are to be provided with succulent grass throughout most of the grazing season. To achieve this grazing must be controlled and steps taken to bridge the summer gap and lengthen the growing season by staggered manuring, by the direct seeding of grass in spring, and by the use of drought-resisting plants such as cocksfoot and lucerne.

Controlled grazing, using smaller fields, allows the number of cows per acre to be increased or decreased as required when grass is abundant or scarce. During a flush of grass the cows graze on a smaller area, the remainder being mown for hay, silage, or dried grass. During a period of scarcity less fodder is conserved and a greater area becomes available for grazing.

Now is the time to plan a system that will give increased yields and avoid waste. . . . The expense incurred in changing from extensive to intensive grazing will be repaid by increased milk yields and greater stocks of high quality winter fodder.

* S.I. 1949, No. 1588 and 1590.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

ILLNESS IN HUSKIES

Sir,—I was interested to see Dr. Tom Hare mounted once again on his faithful, but rather weary, horse in your Correspondence columns of December 24th. He suggests the possibility of *Bet. haemolytic streptococcus* infection being the cause of the outbreak in huskies reported in your issue of December 10th.

I thought it was now so generally accepted that hard pad disease was caused by a virus that I omitted to include in this article, the result of bacteriological examination of tonsillar swabs taken from six of the huskies during the height of the disease. For his information, therefore, I give the result of these tests:—

Six showed *Bacillus proteus*,
Three showed *Staphylococcus aureus* (coagulase positive),
One showed *Staphylococcus albus* (coagulase positive), and
Two showed Entero-coccus.

It may be noted that *B.H.S.* was not found in any of the six.

Yours faithfully,
C. E. Woodrow.

14, Pont Street,
Knightsbridge, London, S.W.1.
December 30th, 1949.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Parasitic Mange*	Sheep Scab	Swine Fever
Dec. 1st to 15th, 1949	7	—	16	—	8	—
Corresponding period in—						
1948	9	1	5	—	4	—
1947	4	—	109	—	10	—
1946	4	4	—	—	2	5
Jan. 1st to Dec. 15th, 1949	224	15	574	—	42	5
Corresponding period in—						
1948	110	12	259	1	64	27
1947	115	103	2174	1	86	34
1946	91	41	—	7	92	345

Note.—The figures for the current year are approximate only.

* Excluding outbreaks in Army Horses.